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ABSTRACT

Forty randomly selected, nonvolunteer, low achieving ninth graders selected from four classes in an inner city junior high school, were assigned the role of tutor to elementary school children in order to determine if this practice was promising as a method of compensatory education. In three of the four classrooms, the tutors and nontutors received the initial instruction together for three days. The instruction covered eleven objectives in fractions and the addition of fractions. For the next three weeks, tutors spent their math period tutoring fourth graders at a nearby elementary school, while nontutors worked in class practicing the same work that the tutors were teaching. These students formed a competing-treatment control group. Tutors from the remaining classroom were pulled out of class for the initial instruction, and students left in this fourth class continued to receive their regular math curriculum. They did not study the eleven objectives, and these students formed the no-treatment control group. Among the conclusions of the study drawn from results observed are the following: (1) this role change intervention was qualitatively different from other approaches that had been tried; (2) having to teach did produce learning in the teacher; (3) this intervention faced up to the responsibility of the schools to teach basic skills; and (4) this intervention affected secondary school children and elementary school children simultaneously. The study suggests that, initially at least, tutoring should be an assigned rather than a voluntary activity. (Author/AM)

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THE ROLE CHANGE INTERVENTION:

Experimental Data and a Design for Compensatory Education

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All is not well in our secondary schools. In the assigned role of "student," the passive recipient of instruction, many adolescents are restless, bored and given to the diversions made available by taking on adversary roles towards their beleaguered teachers. Young men and women are coming of age in our schools, and there are no rites of passage, no bar mitzvahs, no official recognition that they might do more than just do as they are told, no welcome to responsible roles in the community. The only recognition schools give to their students' transition to adulthood is a grim remonstrance that, from the ninth grade onwards, school records "count." And all too often those school records show that many students, both at the junior and senior high school levels, are not competent in basic skills such as reading and computation.

What can schools do? Close down? That won't happen; their custodial function is far too essential to the way the community is organized. Open up--placing students in jobs in the community, work experience, apprenticeships? Perhaps, but every effort encounters the obstacle that work places have no room for adolescents. Students are unwelcome in factories and offices and few positions can be found for them. In any case, there is the problem of the non-reading, non-writing, non-computing students. With many students, schools have not succeeeded in meeting their very minimal responsibility: that of teaching basic skills. This is particularly true in inner city schools; achievement levels there are dismal.

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What is the problem? Teachers will tell you students don't try to learn; they won't work; they don't care. And those students who, by secondary school, still don't know the basics are the most difficult to help.

Outsiders sit in judgment on teachers and tend to blame them. Teachers blame the situation they are in. (The different attributions are typical of the actor vs the observer problem described by Nesbitt & Valins, 19).

Instead of judging, perhaps misjudging, can we suggest help for the teachers? Put yourself in the teacher's position: How does one motivate, for example, a ninth grade general math class to work on basic arithmetic skills? How does one lead them to abandon the adolescent fracas--the "she's got my pencil" syndrome, and the excitement of a "your mother" confrontation between two young men? How can the working classroom be more fun than the non-working classroom?

Change the role of the student! Assign students to tutor younger students: "Next week you will each teach this work to a fourth grader." Disbelief sets in. "Me? Teach? I never got better than a 'D' in Math. I don't know this stuff." You have now accomplished two crucial steps in teaching: you have the students' attention and you have induced in them a feeling that they need to learn the work you want them to learn. And that need is not a need to know the work for some hypothetical future career; they need to know it for next week. Now, when you explain the work, you receive unprecedented attention.

Experiment

In an inner-city junior high school, population approximately 90% Black and 10% Chicano, forty tutors were randomly selected from four ninth grade math classes. In three of the four classrooms, the tutors and non-tutors

received initial instruction together for three days. The instruction covered eleven objectives in fractions and the addition of fractions. Then for the following three weeks, tutors spent their math period tutoring fourth graders at a nearby elementary school while non-tutors worked in class with their regular teacher practicing the same work that the tutors were teaching. Thus these students formed a competing-treatment control group: regular classwork as opposed to time-spent-tutoring.

Tutors from the remaining classroom were pulled out of class for the initial instruction, and students remaining in this fourth classroom simply continued to receive their regular math curriculum; they did not study the eleven objectives per se. Thus these students formed, essentially, a no-treatment control group.

Results

The immediately observable result was that these randomly selected, non-volunteer, low achieving ninth graders worked hard with their fourth graders. Whether assigned to teach for 20 minutes, 30 minutes, 40 minutes or even 80 minutes per day, the tutors worked. In fact, these unmotivated students, many of whom usually showed up in their regular classes without even a pencil--a clear indication of a lack of intention to work--were hard task masters in their new roles.

As a check on initial equivalence of tutors and non-tutors, a multivariate analysis of variance was run on three d.v.s: ability as measured by the Raven Standard Progressive Matrices, an arithemtic pretest, and teacher's ratings of the students' usual academic effort. Factors were classrooms and the tutoring/non-tutoring condition. Initial equivalence of the groups was clearly established.

Posttest results are shown in Figure 1. For groups of students who spent differing amounts of time per day working on the eleven objectives, the means are displayed along with the 95 percent confidence limits on the means. "Condition 1" was the no-treatment control group, with a mean of 21.6 on the 55 item posttest. "Condition 4" was the competing-treatment received by students working on the eleven objectives in their math classes. The mean for this competing treatment control group was 27.0. All the tutoring conditions yielded higher means than either of the control groups. A one-way ANOVA showed significant overall differences across the seven conditions ($F=3.17$, $df=71$, $p < .01$). An a priori contrast of the competing treatment control group (condition 4) against the tutoring conditions (2, 3, 5, 6 and 7) was significant ($t=3.02$, $df=65$, $p=.004$). Being a tutor apparently led to higher achievement than staying in class--even a class that was working on the same objectives and was much reduced in size due to the outflux of the tutors. Perhaps most important was the fact that three months later on a retention test, tutors' scores were still significantly higher than those of non-tutors. The non-tutors had followed what must have been their pattern throughout the previous five years of schooling: they had forgotten most of the work they had learned; their retention test scores were not significantly different from their pretest scores.

And what of tutees? Tutees had been randomly selected from three fourth grade classrooms. They had received either zero minutes of tutoring (the control group) or tutoring sessions of either 20, 30, or 40 minutes duration daily for three weeks. Each tutee was always taught by the same ninth grade tutor. Figure 2 shows the posttest means and the 95 percent confidence limits on the means. Tutees had scored significantly higher than non-tutees. Again, as with tutors, tutees maintained their significant advantage across the three months to retention test time.

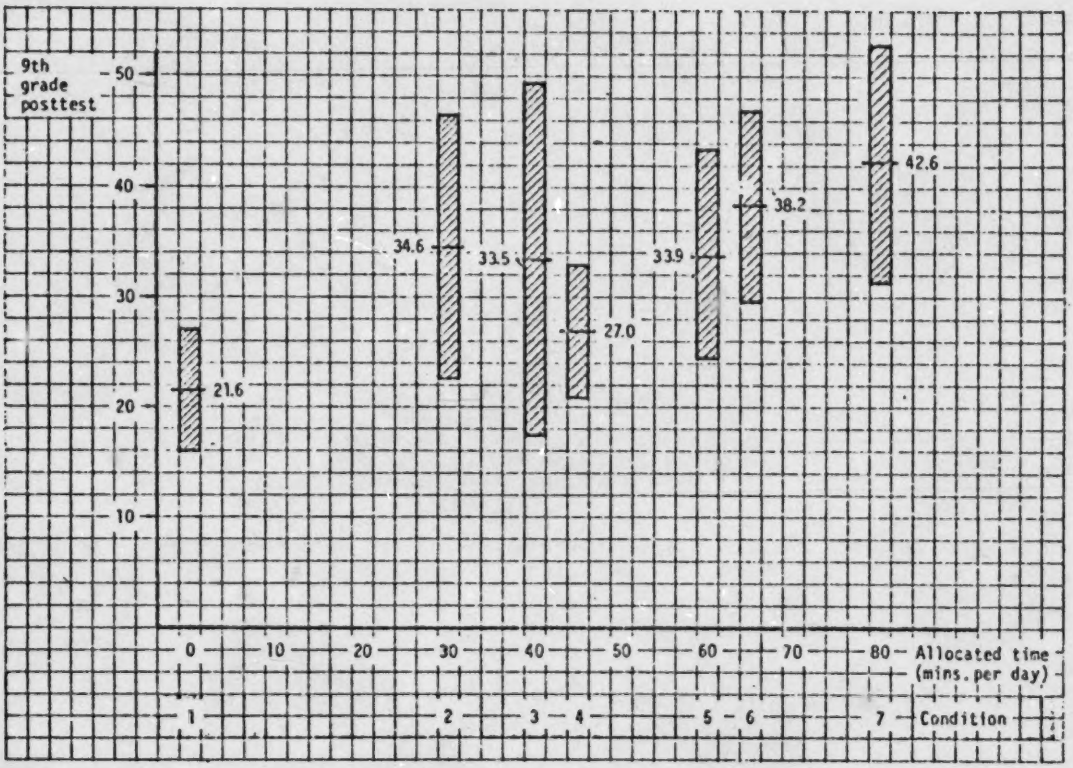

Figure 1. Ninth grade posttest results: posttest means and 95% confidence limits for ninth graders in the seven conditions.

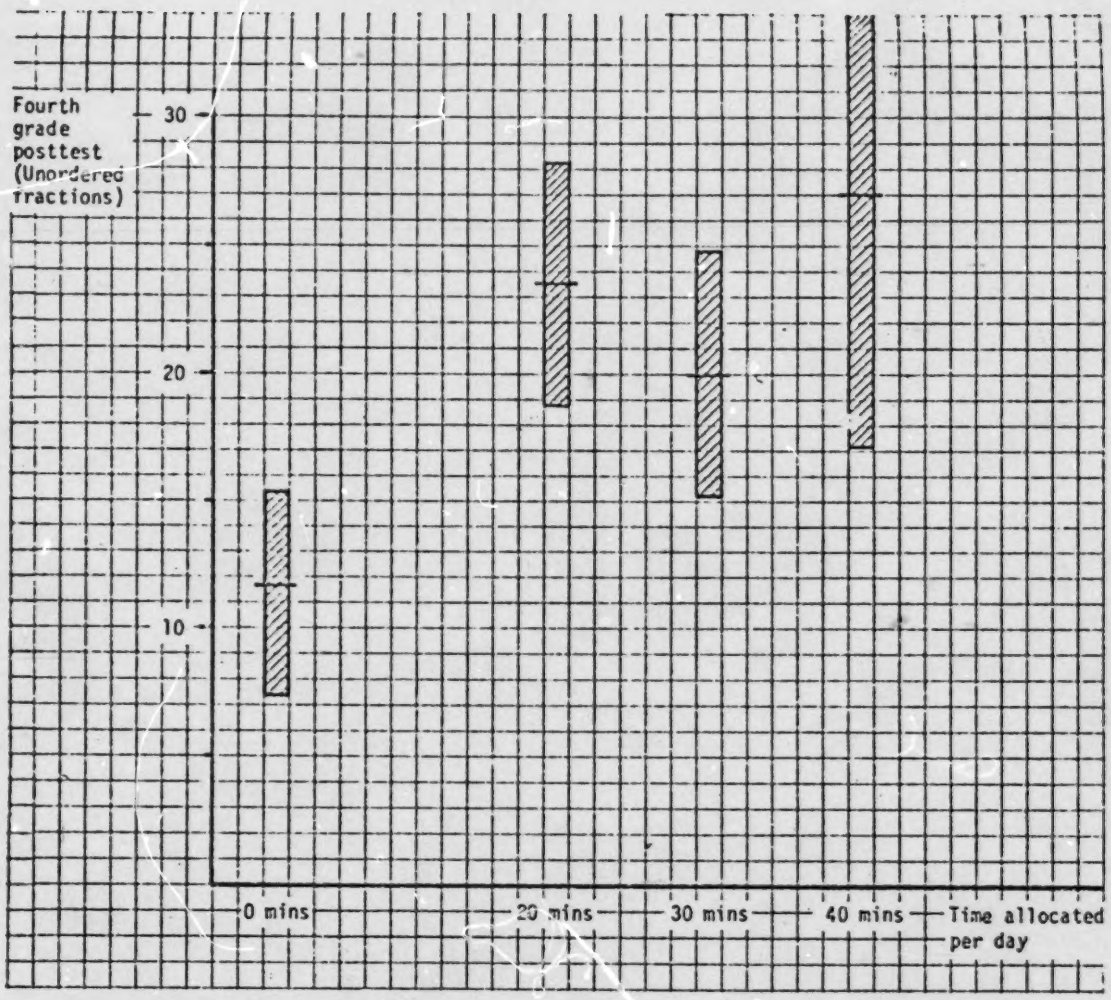

Figure 2. Fourth grade posttest results: Posttest means and 95% confidence limits for fourth graders allocated zero, 20, 30, or 40 minutes of tutoring daily.

Some concern might be felt about having low-achieving students tutor. It may benefit the tutor, but can low achievers be effective tutors; would not tutees benefit more by being taught by high achieving students? The tutors in this experiment were all drawn from low achieving classes so that a complete range of achievement was not represented. It was interesting to find, however, that within this restricted range it was the lower achievers who were the slightly more effective tutors. The tendency was not a strong one, but it was sufficient to refute any suggestion of a tendency in the opposite direction. The implication of this finding and indeed of the whole experiment is that it is not necessary to confine the tutoring role to the more able students. In considering this slightly counter-intuitive finding--that lower achieving students taught their tutees slightly better than did higher achieving students --it must be noted that the task was one of tutoring to limited, clearly defined objectives. Tutors who went slowly, repetitiously through the simple objectives were probably effective because that is the kind of teaching the fourth graders, approaching the work for the first time, needed. Higher achieving students might have moved too quickly through the materials and have been less effective for that reason.

Another slight tendency was for students who were rated by their teachers as low in usual academic effort to be the slightly more effective tutors than the more motivated students. This tendency was shown by a significant negative correlation of -.30 ($p = .03$, $n = 39$) between tutee residual gains and the ratings tutors had received from their teachers for effort. Apparently, low achieving and poorly motivated students can make effective tutors.

It will be recalled that students had been randomly assigned to tutor; they were not volunteers. What effect did this non-voluntary tutoring

assignment have on students' attitude to tutoring? At retention test time, three months after the intervention, ninth graders were asked, "Would you like to be a tutor next year?" An analysis of variance of responses with the three factors of tutoring experience, sex of student, and the teacher's perception of the student's usual level of effort in academic subjects is shown in Table 1. The significant effects were main effects for tutoring and sex. The cell means for male and female tutors are illustrated in Figure 3.

Table 1

ANOVA for Ninth Graders Attitudes to Tutoring:
Effect of Tutoring Experience and Sex and Effort
Characteristics on Interest in More Tutoring
Measured Almost Three Months after the End of the Project

Source	df	MS	F
Tutoring Experience (T)	1	8.82	4.55*
Sex (S)	1	7.56	3.90*
Effort rating (E)	3	2.45	1.26
T x S	1	1.71	0.88
T x E	3	1.80	0.93
S x E	3	0.41	0.21
T x S x E	3	2.64	1.36
Residual	55	1.94	
Total	70	2.10	

*$p < .05$

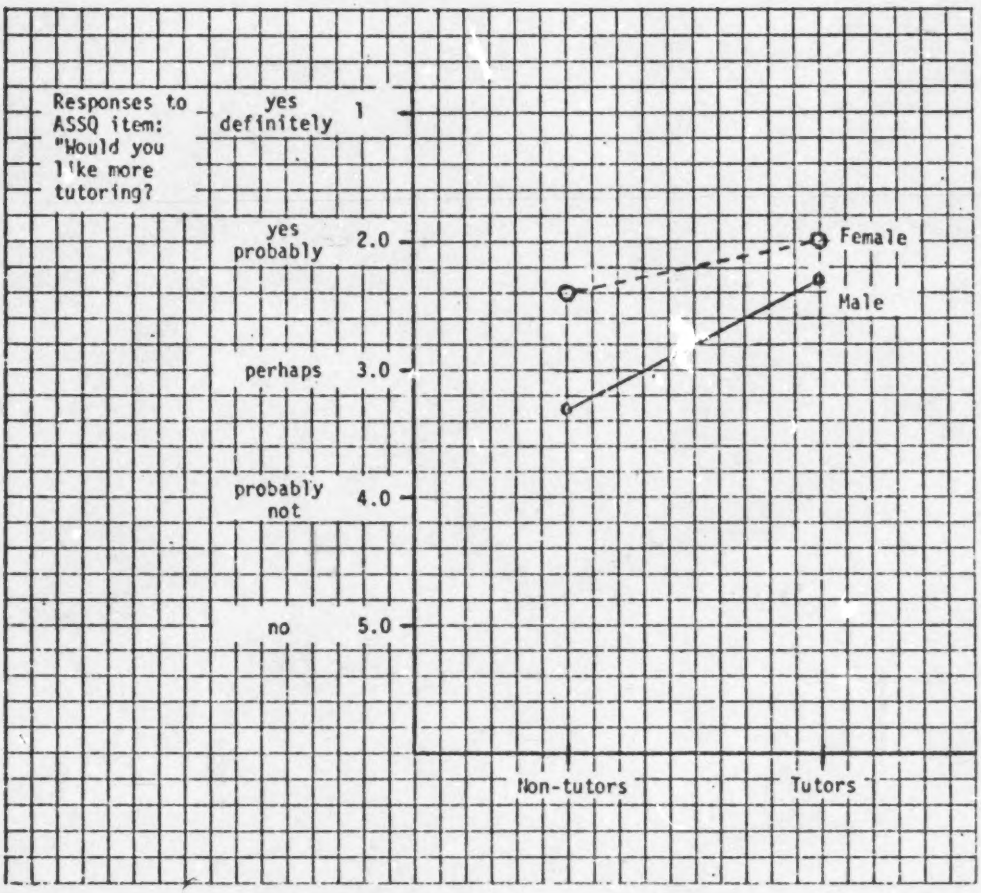

Figure 3. Responses of tutors and non-tutors to tutoring: mean responses of male and female ninth graders who had and had not experienced being a tutor, to questions about tutoring in the future.

Females were more interested in being a tutor the following year than were males, and those who had tutored were significantly more interested than those who had not tutored. This finding suggests that, initially at least, tutoring should be an assigned rather than a voluntary activity.

Discussion

The Role Change Intervention--casting the secondary school student in the role of tutor to an elementary school child--has enormous promise as a method of compensatory education. Reasons for this statement will be enumerated as a conclusion to this paper.

1. The intervention is qualitatively different from other approaches which have been tried. Many compensatory programs have changed curricula, changed media, changed technologies, added resources, added tests, or added adults, but they have not changed what is demanded of the student: that he or she study now for his or her later benefit. ("Learn fractions; it will do you good later.") The Role Change Intervention makes a radical change in the social-psychological context of learning. School changes immediately and dramatically in its interpersonal impact when the Role Change Intervention is introduced.

2. Having to teach does produce learning in the teacher. This is an almost universal experience; having to teach something one does not quite know induces quick learning and the act of teaching it several times produces lasting learning. The term paper you remember is the one you prepared and presented, not the one that you listened to.

In the terminology of cognitive psychology, the situation of being about to teach produces the inadequacy which precedes efforts at growth. The cognitive processing involved in organizing the material for presentation fits the material into the tutor's own personal schema.

3. The Role Change Intervention faces up to the responsibility of the schools to teach basic skills. By setting this work in the context of an interpersonal relationship which is potentially very rewarding for both the tutor, who takes pride in being a teacher, and for the tutee, who welcomes the individual attention, schools can finally begin to get the necessary time spent on those necessary tasks.

4. The Role Change Intervention affects secondary school children and elementary school children simultaneously. It does not irvolve writing off the generation currently in the secondary schools as a lost cause and concentrating on early childhood, hoping for a pay-off to society in the distant future. Both the secondary school generations and the elementary school generations start to benefit immediately.

5. Tutors reach out and involve the community. The Role Change Intervention provides for closer home-school links because the community is involved. Unlike many teachers, secondary school students live in the local community, and can more easily make visits to homes, carry messages, and report informally on progress to parents whom they might meet in the supermarket. Moreover, a visit to a child's house by a student tutor is not as threatening as a visit by a teacher.

Incidents were noted which indicated that tutors could become important links to the community for the school. For example:

- When one tutee was inclined to play rather than work with his ninth grade tutor, another tutor warned the tutee, "I know your house. I'm going to tell your mother if you don't work." The tutee sobered.
- A tutor forgot to set homework so he took it round to his tutee's house after school.
- That parents accept the tutors was indicated by the actions of a father who wrote the tutor a note explaining why homework which the tutor had set had not been done.

This, then, is how the schools of the future should look. And daily tutoring should not be just for a few volunteers or a single elective, but should occur on a regular basis. [Slides] Let the schools welcome students into adulthood by assigning them new, diverse roles, roles involving significant responsibilities.

We shall all reap the benefits of this simple, sound, feasible idea.